

Ecological site R010XA002ID Clayey 12-16 PZ ARTR4/PSSPS

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. These factors support plant communities with shrub-grass associations with considerable acreage of sagebrush grassland. Big sagebrush, bluebunch wheatgrass, and Idaho fescue are the dominant species. Stiff sagebrush, low sagebrush, and Sandberg bluegrass are often dominant on sites with shallow restrictive layers. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing with areas accessible by irrigation often used for irrigated agriculture.

For further information, see "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Ecological site concept

- Site occurs on Uplands
- Slope 1-20%, occurring on all aspects
- Soils are greater than 20" deep. Moderately deep to deep.
- Site not associated with recent lava flows
- Soils are not sandy, textures are silt loams, silty clay to clay.
- Elevation 4000-5500 ft.

Associated sites

R010XA032ID	Bouldery 11-13 PZ ARTRX/PSSPS Adjacent bouldery soils
R010XA033ID	Loamy 11-13 PZ ARTRX/PSSPS Adjacent loamy soils

Similar sites

R010XA034ID	Claypan 10-12 PZ ARTR4/PSSPS-ACTH7 Soils 20-40" to a duripan
R010XA033ID	Loamy 11-13 PZ ARTRX/PSSPS Site supports ARTRX rather than ARTR4, no abiotic criteria identified

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tripartita</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i>

Physiographic features

This site occurs on rolling plains and hills on all aspects. Slopes range from 1 to 20 percent. Elevations range from 4000 to 5500 feet (1200 to 1700 meters).

Table 2. Representative physiographic features

Landforms	(1) Foothills > Hill
Flooding frequency	None
Ponding frequency	None
Elevation	1,219–1,676 m
Slope	1–20%
Aspect	Aspect is not a significant factor

Climatic features

The Big and Little Wood River Foothills and Plains, proposed as MLRA 10A, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. The average annual precipitation, based on 7 long term climate stations located throughout the MLRA, is 15.39 inches, with a range of 12.5 to 18 inches. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a low in July and August, then increases rapidly in the autumn.

Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9° Fahrenheit. The frost-free period ranges from 75 to 98 days. The freeze-free period is a bit longer range of 106 to 133 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February.

Table 3. Representative climatic features

Frost-free period (characteristic range)	75-98 days
Freeze-free period (characteristic range)	106-133 days
Precipitation total (characteristic range)	305-406 mm
Frost-free period (actual range)	
Freeze-free period (actual range)	
Precipitation total (actual range)	305-457 mm
Frost-free period (average)	98 days
Freeze-free period (average)	133 days
Precipitation total (average)	381 mm

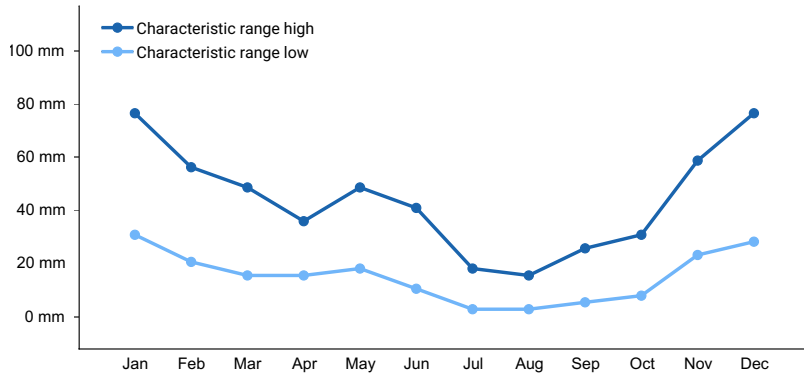


Figure 1. Monthly precipitation range

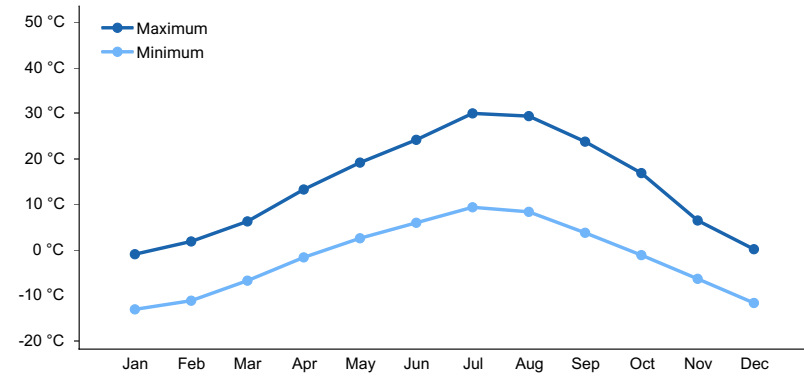


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is not influenced by adjacent streams or run on.

Wetland description

This site is not influenced by adjacent wetlands.

Soil features

The soils on this site are derived from basalt residuum. They are moderately deep to deep, well developed and well drained soils. The surface textures are mostly silt loams and grade into silty clay to clay, no abrupt change is identified. Infiltration is good, however, with increasing clays lower in the profile, water movement is very slow in the subsoil.

Table 4. Representative soil features

Parent material	(1) Residuum–basalt
Surface texture	(1) Sandy loam (2) Silty clay loam
Drainage class	Well drained
Soil depth	51–152 cm

Ecological dynamics

The dominant visual aspect of this site is three-tip sagebrush, bluebunch wheatgrass and Thurber's needlegrass. Composition by weight is approximately 45 to 65 percent grasses, 15 to 25 percent forbs, and 15 to 35 percent shrubs.

This plant community may be a Loamy site with basin big sagebrush in the overstory that has become dominated by

three-tip sagebrush due to man-caused frequent fires since the early 1900's (fire disclimax). The re-establishment of basin big sagebrush requires a long time period with no fire when the plant community is dominated by three-tip sagebrush. Evidence of this becomes apparent by the presence of scattered basin big sagebrush plants on the landscape, even though the soils are the same. Additional field data is needed to confirm this concept.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, Rocky Mountain elk, sage grouse, lagomorphs, and small rodents.

Fire has historically occurred on this site every 25 to 40 years.

The the Reference State (State 1), historically known as the Historic Climax Plant Community (HCPC), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases.

FUNCTION:

This site is suited for grazing with domestic livestock in late spring, summer, and fall. Usually this site is a key area in a management program. The site is used by mule deer, Rocky Mountain elk, lagomorphs, small rodents, and predators. Pronghorn antelope use the site only occasionally due to the height of shrubs. This site has limited recreational use except hunting.

Due to the relatively flat slopes and easy access by animals, this site is easily degraded by improper grazing management or frequent fires. Infiltration can be good with a mixed stand of shrubs and perennial grasses. Runoff, when it does occur, is non-erosive except during high intensity convection storms. Snow is caught in the shrub interspaces and a mixed stand of shrubs and perennial grasses is necessary to reach potential of the site.

Impacts on the Plant Community.

Influence of fire:

Three-tip sagebrush exhibits variable sprouting abilities following fire. The specific response may depend on ecotypic differences, fire severity, soil moisture, or a combination of these factors. Within its' range in Idaho, re-sprouting ability varies from weak to strong. When it does re-sprout, three-tip sagebrush sprouts from shallow lateral roots or the root crown. It can also layer. Nearly pure stands can develop in some locations after the site burns.

In the absence of normal fire frequency three-tip sagebrush can gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, these shrubs can displace many of the primary understory species.

When fires become more frequent than historic levels (25 to 40 years), three-tip sagebrush is reduced significantly. If it has the ability to re-sprout, the reduction will be short-lived, typically 5 to 10 years. Rabbitbrush can increase slightly. With continued short fire frequency many of the desirable understory species such as bluebunch wheatgrass and Thurber's needlegrass will be reduced or eliminated. These species may be replaced by Sandberg bluegrass and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Cheatgrass and medusahead will invade the site. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to increase in three-tip sagebrush.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass and/or medusahead increase due to improper grazing management and they become co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This reduction can lead to gradual increases in three-tip sagebrush. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Any brush management should be carefully planned, as a reduction in shrubs without a suitable understory of perennial grasses can increase cheatgrass and/or medusahead which will lead to more frequent fire intervals.

Weather influences:

Above normal precipitation in March, April, and May can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Overall plant composition is normally not affected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. An early, hard freeze can occasionally kill some plants. Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. Bitterbrush can be severely affected by the western tent caterpillar (*Malacosoma fragilis*). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. It seldom kills the entire stand. Mormon crickets and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency. Perennial and annual invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals use this site in the spring, summer and fall and in moderate winters. Their numbers are seldom high enough to adversely affect the plant community. Burrowing rodents can create microsites for establishment of noxious and invasive plants.

Watershed:

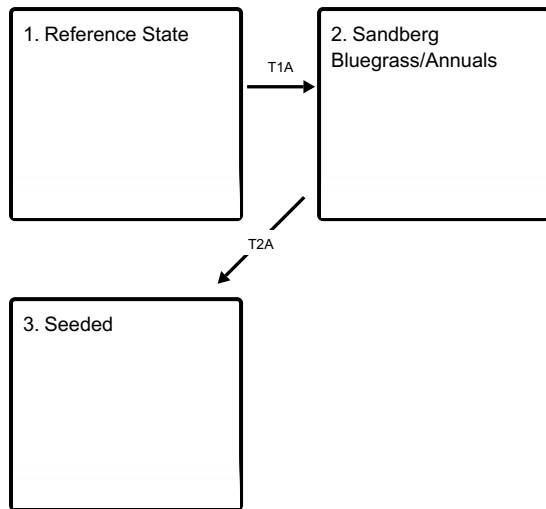
Decreased infiltration and increased runoff occur with an increase in three-tip sagebrush. Desired understory species can be reduced. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long-term effect is a transition to a different state.

Practice Limitations.

Only slight limitations exist on this site for implementing vegetative management practices. This site has moderate limitations for seeding due to an occasional rock outcrop and stones on or near the surface. Mechanical, chemical, and fire are satisfactory methods of brush management on this site, however three-tip sagebrush may re-sprout if any of these treatments are used. Planning should carefully analyze the stand of perennial grasses and forbs, because removal of three-tip sagebrush can result in a significant increase in cheatgrass and medusahead. If the plant community becomes dominated with cheatgrass, increased fire frequency could irreversibly degrade the community. Slight to moderate limitations exist on this site for implementing facilitating practices such as water developments, salting, and fencing

State and transition model

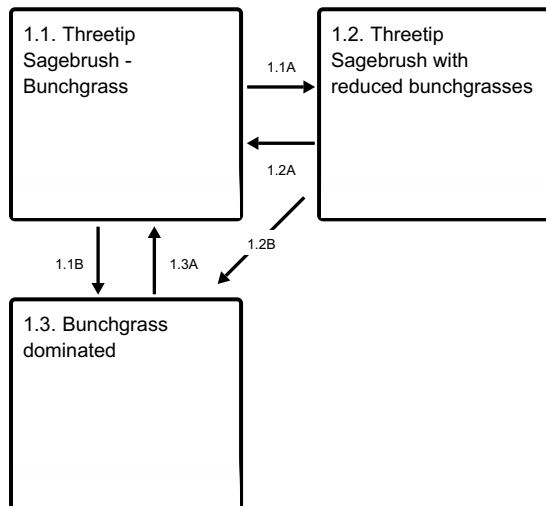
Ecosystem states



T1A - frequent fire, improper grazing

T2A - range seeding

State 1 submodel, plant communities



1.1A - absence of fire and improper grazing management

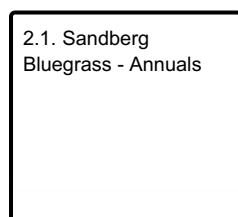
1.1B - fire

1.2A - prescribed grazing and no fire

1.2B - fire

1.3A - prescribed grazing and no fire

State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Seeded

**State 1
Reference State**

**Community 1.1
Threetip Sagebrush - Bunchgrass**

This plant community has three-tip sagebrush in the overstory with bluebunch wheatgrass and Thurber’s needlegrass dominating the understory. Sandberg bluegrass, prairie Junegrass, stipate milkvetch, and tapertip hawksbeard are common. Natural fire frequency is 25 to 40 years.

Resilience management. The Reference Plant Community Phase is Phase 1.1. This plant community is dominated by three-tip sagebrush, Thurber’s needlegrass, and bluebunch wheatgrass. Subdominant species include Sandberg bluegrass, prairie junegrass, stipate milkvetch, and tapertip hawksbeard. The plant species composition of Phase 1.1 is listed later under “Reference Plant Community Phase Plant Species Composition”. Total annual production is 1000 pounds per acre (1111 Kg/ha) in a normal year. Production in a favorable year is 1400 pounds per acre (1555 Kg/ha). Production in an unfavorable year is 700 pounds per acre (777 Kg/ha). Structurally, cool season deep-rooted perennial bunchgrasses are very dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	432	616	863
Shrub/Vine	196	280	392
Forb	157	224	314
Total	785	1120	1569

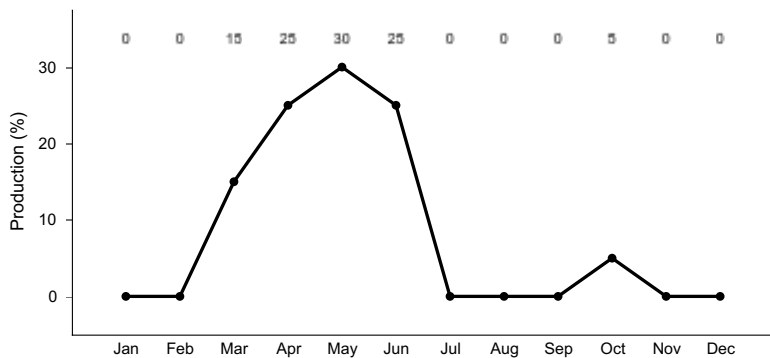


Figure 4. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .

**Community 1.2
Threetip Sagebrush with reduced bunchgrasses**

This plant community is dominated by three-tip sagebrush with reduced amounts of bluebunch wheatgrass and other deep-rooted perennial bunchgrasses. Sandberg bluegrass and bottlebrush squirreltail have increased in the understory. All deep-rooted perennial bunchgrasses are typically in low vigor. Three-tip sagebrush has increased as well as some other tall shrubs. This state has developed due to improper grazing management and lack of fire.

Some cheatgrass and medusahead may have invaded the site.

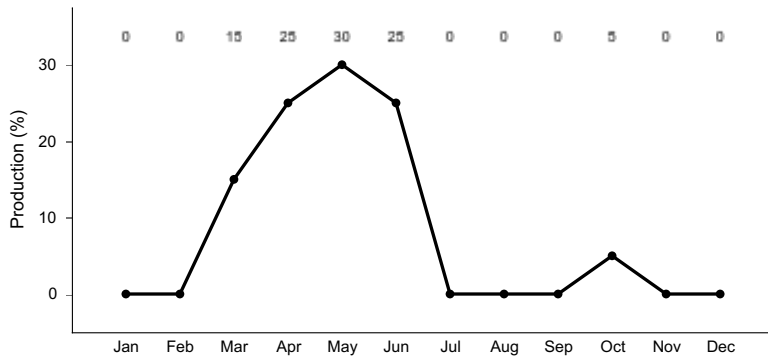


Figure 5. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .

Community 1.3 Bunchgrass dominated

This plant community is dominated by bluebunch wheatgrass, Sandberg bluegrass, and tall root-sprouting shrubs. Thurber's needlegrass can be lost due to fire. Bottlebrush squirreltail has increased. Forbs remain about in the same proportion as Phase A. Three-tip sagebrush has been reduced significantly due to wildfire but will likely re-sprout. Some cheatgrass and medusahead may have invaded the site. This plant community is the result of wildfire.

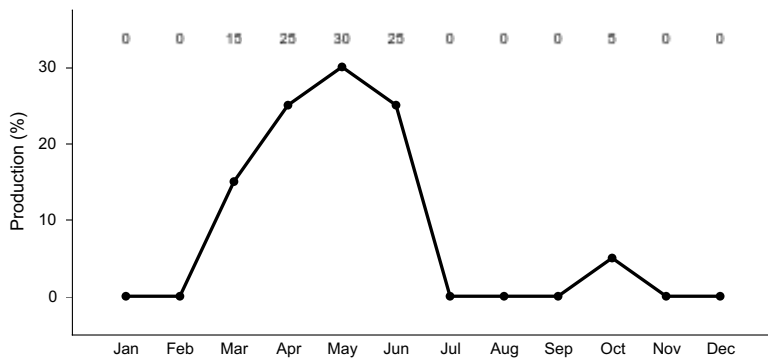


Figure 6. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .

Pathway 1.1A Community 1.1 to 1.2

Phase 1.1 to 1.2. Develops in the absence of fire and improper grazing management.

Pathway 1.1B Community 1.1 to 1.3

Develops with fire.

Pathway 1.2A Community 1.2 to 1.1

Develops with prescribed grazing and no fire.

Pathway 1.2B Community 1.2 to 1.3

Develops with fire.

Pathway 1.3A Community 1.3 to 1.1

Develops with prescribed grazing and no fire.

State 2 Sandberg Bluegrass/Annuals

Resilience management. State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is not economically practical to return this plant community to State 1 with accelerating practices.

Community 2.1 Sandberg Bluegrass - Annuals

This plant community is dominated by Sandberg bluegrass, cheatgrass, and other annuals. Root sprouting shrubs such as three-tip sagebrush, rabbitbrush, and horsebrush can be present, dependent upon, how frequent fire has occurred. Some soil loss has occurred. This state has developed due to frequent fires and/or improper grazing management from Phase 1.3 State 1 or frequent fire and improper grazing management from Phase 1.2 State 1. This site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

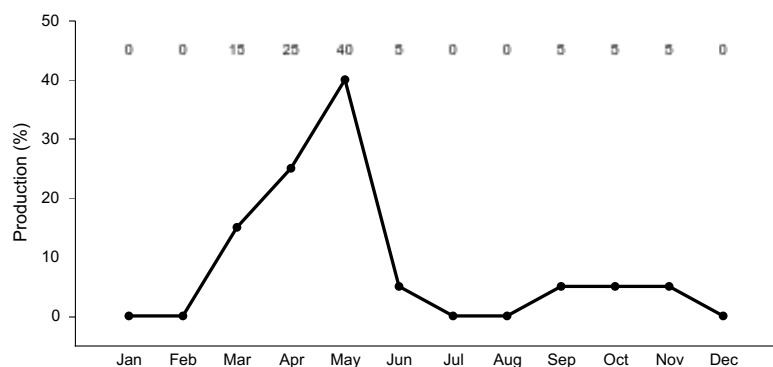


Figure 7. Plant community growth curve (percent production by month). ID0311, POSE/BRTE-ANNUALS . State 2.

State 3 Seeded

Community 3.1 Seeded

This plant community results from range seeding. The seeding may be introduced species or it may be made up of native species that attempt to mimic State 1.

Transition T1A State 1 to 2

State 1, Phase 1.2 to State 2. Develops with frequent fire and improper grazing management. State 1, Phase 1.3 to State 2. Develops through frequent fire and/or improper grazing management. This site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

Transition T2A State 2 to 3

Results from range seeding.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				432–863	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	224–476	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	112–224	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	56–112	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	56–112	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	28–56	–
	thickspike wheatgrass	ELLA3	<i>Elymus lanceolatus</i>	11–22	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	11–22	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	0–11	–
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	0–11	–
Forb					
2				157–314	
	basalt milkvetch	ASFI	<i>Astragalus filipes</i>	28–56	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	28–56	–
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	17–34	–
	nineleaf biscuitroot	LOTR2	<i>Lomatium triternatum</i>	11–22	–
	velvet lupine	LULE3	<i>Lupinus leucophyllus</i>	11–22	–
	oblongleaf bluebells	MEOB	<i>Mertensia oblongifolia</i>	0–11	–
	nodding microseris	MINU	<i>Microseris nutans</i>	0–11	–
	spiny phlox	PHHO	<i>Phlox hoodii</i>	0–11	–
	Idaho blue-eyed grass	SIID	<i>Sisyrinchium idahoense</i>	0–11	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–11	–
	old man's whiskers	GETR	<i>Geum triflorum</i>	0–11	–
	pale agoseris	AGGL	<i>Agoseris glauca</i>	0–11	–
	tapertip onion	ALAC4	<i>Allium acuminatum</i>	0–11	–
	lesser rushy milkvetch	ASCO12	<i>Astragalus convallarius</i>	0–11	–
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	0–11	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–11	–
	Parry's blue eyed Mary	COPA2	<i>Collinsia parryi</i>	0–11	–
Shrub/Vine					
3	Shrubs			196–392	
	threetip sagebrush	ARTR4	<i>Artemisia tripartita</i>	168–336	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	17–34	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0–11	–
	mountain snowberry	SYOR2	<i>Symphoricarpos oreophilus</i>	0–11	–
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	0–11	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	0–11	–
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata</i> ssp. <i>vaseviana</i>	0–11	–

	sagebrush		viscidiflorus		
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0–11	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–11	–

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. Large herbivore use of this ecological site is dominated by mule deer and elk. Pronghorn antelope occasionally utilize this site depending on shrub height and density. Important seasonal habitat is provided for resident and migratory animals including western toad, sagebrush lizard, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Changes in the plant community composition can reduce the number and diversity of wildlife species in the area. With reduced shrub cover, shrub obligate avian and mammal species become rare including sage-grouse, brewer's sparrow, sage sparrow, sage thrasher and pygmy rabbits. An increase in three-tip sagebrush would also decrease wildlife use due to a corresponding decrease in favorable understory vegetation. Encroachment of noxious and invasive plant species (cheatgrass and medusahead) can replace native plant species which provide critical feed, brood-rearing and nesting cover for a variety of native wildlife. The loss of herbaceous understory vegetation has a negative impact on ground nesting birds, while the loss of shrub cover negatively affects both ground and shrub nesting avians. Water is limited, being provided only by seasonal runoff, artificial water catchments, and spring sites. This rangeland ecological site is commonly associated with pre-historic lava flows which provide unique cave habitats for several sensitive animal species including the Blind Cave Leiodid Beetle, Cave Obligate Mite, Bats, and the Cave Obligate Harvestman.

State 1 Phase 1.1 - Three-tip Sagebrush/ Bluebunch Wheatgrass/ Thurber's Needlegrass Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs and shrubs, used by native insect communities that assist in pollination. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake, western toad, boreal chorus frog, and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of these sites by amphibians. Area sensitive species reliant on the native shrub-steppe plant community include the Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Critical habitat (lek sites, nesting areas, winter cover, and food) for sagebrush obligate avian species is provided by this diverse plant community. The plant community supports limited seasonal needs of large mammals (mule deer and elk) because the dominant shrub, three-tip sagebrush, provides limited forage value. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots, and pygmy rabbits would utilize these areas.

State 1 Phase 1.2 - Three-tip Sagebrush/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of improper grazing management and a lack of fire. The increase in three-tip sagebrush and loss of vigor in the historic herbaceous vegetation has reduced the habitat value for many resident and migratory native animal species. Grasses, forbs, and shrubs, are used by native insects that assist in pollination but the reduced herbaceous understory results in lower diversity and numbers of insects. The reptile community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, and western rattlesnake. The reduction of grasses and forbs in the plant community would reduce the available prey species and cover for these resident reptile species. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collected all available water would preclude the use of these sites by amphibians. Shrub-steppe obligate wildlife species including Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse utilize the site. Critical habitat (lek sites, nesting areas, winter cover, and food) for sage-grouse is limited due to the change in plant community, dominated by three-tip sagebrush and reduced understory of herbaceous vegetation. The plant community supports limited seasonal (spring through fall) needs of large mammals (mule deer and elk) because the dominant shrub, three-tip sagebrush, provides limited forage value. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots, and pygmy rabbits would continue to utilize these areas.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This

plant community is the result of fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush provides less vertical structure for animals. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. The reptiles including short horned lizard, sagebrush lizard, and western rattlesnakes, would be limited or excluded. The dominance of herbaceous vegetation with little sagebrush canopy cover would prevent use of these areas for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides limited brood-rearing habitat for sage-grouse when cover habitat is nearby. The plant community would not provide suitable winter cover or winter feed for sage-grouse. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Large mammal (mule deer, antelope, and elk) use would be seasonal but the site would offer little thermal or young of year cover. Small mammal diversity would be reduced and the plant community would not provide suitable habitat for pygmy rabbits.

State 2 - Sandberg Bluegrass/ Cheatgrass and Annual Plant Community: This plant community is the result of continued improper grazing management and/or frequent fire. The plant community does not support a diverse insect community. The reduced forb component in the plant community would support a very limited population of pollinators. Most native reptilian species would not be supported by this plant community. This plant community does not support the habitat requirements for sage-grouse, sage thrasher, Brewer's sparrow, or sage sparrow. Diversity of grassland avian species is reduced due to poor cover and food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. The reduction of insect populations and diversity would reduce suitability of site for bats. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

State 3 - Range Seeding Plant Community: The seeding mixture (native or non-native) determines the animal species that utilize this site. A diverse seed mixture of grasses and forbs would provide similar habitat conditions as in the herbaceous plant community described in State 1 phase 1.3. A diverse seed mixture of grasses, forbs and shrubs would provide similar habitat conditions as described in State 1 phase 1.1 or 1.2. A monoculture of non-native grass species would not support diverse populations of insects, reptiles, avians, mammals, or sagebrush obligate species. Grassland animal species including western meadowlark, horned lark, savannah sparrow, and elk would utilize this site for nesting and/or foraging. Birds of prey including hawks and falcons may range throughout this community looking for prey species.

Grazing Interpretations:

This site is suited for grazing with domestic livestock in late spring, summer and fall. Usually this site is a key area in a management program.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species composition, similarity index, production, past use history, season of use, and seasonal preference.

Hydrological functions

No data

Recreational uses

This site has opportunities for big game and upland bird hunting. Hiking, horseback riding, and photography are additional uses. ATV's use this site due to the gentle slopes.

Wood products

None

Other products

None

Other information

Field Offices

Mountain Home, ID

Gooding, ID

Shoshone, ID

Rupert, ID

Arco, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, Range Management Specialist, IASCD

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Type locality

Location 1: Gooding County, ID	
Township/Range/Section	T3S R15E S1
Location 2: Lincoln County, ID	
Township/Range/Section	T3S R17E S26

References

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USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

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Contributors

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Approval

Kirt Walstad, 12/13/2023

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Date	03/26/2008
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** rills rarely occur on this site. If rills are present they are most likely to occur on steeper slopes greater than 10% and immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

- 2. Presence of water flow patterns:** water-flow patterns rarely occur on this site except on slopes greater than 10%. When they occur they are short, disrupted by cool season perennial grasses and tall shrubs and are not extensive.

- 3. Number and height of erosional pedestals or terracettes:** are rare on this site. In areas where slopes are greater than 10% and where flow patterns and /or rills are present, a few pedestals may be expected. Do not misinterpret frost heaving for pedestals. Terracettes can occur on the uphill side of large bunchgrasses or shrubs.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** On sites in mid-seral status, bare ground may range from 30-40 percent.

- 5. Number of gullies and erosion associated with gullies:** do not occur on this site.

- 6. Extent of wind scoured, blowouts and/or depositional areas:** usually does not occur. Some wind erosion may occur immediately following a wildfire on soils that have fine textured surface soils.

- 7. Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move

up to 2 feet or further on slopes greater than 10 percent following a significant run-off event. Coarse litter generally does not move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values should range from 4 to 6 .
-

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** structure ranges from _____ to _____. Soil organic matter (SOM) needs to be determined. The A or A1 horizon is typically _____ inches thick. (no data)
-

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Shrubs accumulate snow in the interspaces. Terracettes provide a favorable micro-site for vegetative establishment which further increases infiltration.
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** not present. Do not mistake the heavy textured subsoil for a compaction layer.
-

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant: cool season deep-rooted perennial bunchgrasses

Sub-dominant: tall shrubs

Other: perennial forbs

Additional: shallow rooted grasses

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** grass and forb mortality will occur as tall shrubs increase.
-

14. **Average percent litter cover (%) and depth (in):** annual litter cover in the interspaces will be 20-30 percent to a depth of <0.1 inch. Under the mature shrubs litter is greater than 0.5 inches. Fine litter can accumulate behind bunchgrasses and shrubs on slopes greater than 10 percent.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 1000 lbs. per acre in a year with normal precipitation and temperatures. Perennial grasses produce 45-65 percent of the total, forbs 15-25percent, and shrubs 15-35 percent.
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize**

degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site: includes cheatgrass, medusahead, bulbous bluegrass, rush skeletonweed, scotch thistle, and spotted and diffuse knapweed.

17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
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